



**NEW ENGLAND
COMMON ASSESSMENT PROGRAM**

**Student Practice Test Booklet
2008**

Grade 11

Science

Student Name: _____

School Name: _____

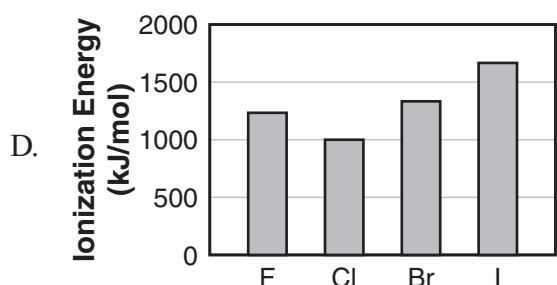
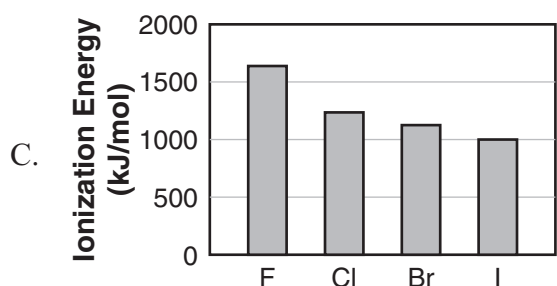
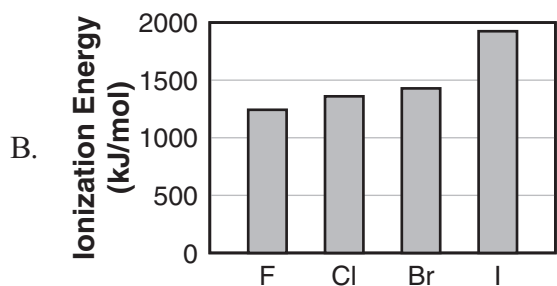
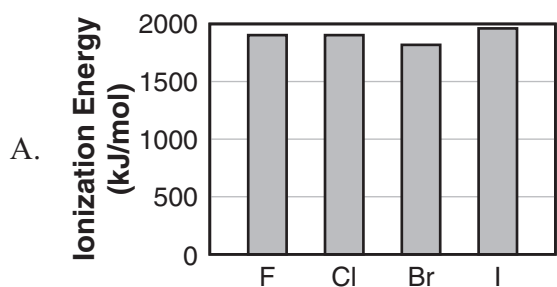
Science

Answer questions 1 through 9 on page 2 in your Student Answer Booklet.

Please use the periodic table on the reference sheet to answer the question.

- 1 Ionization energy is the energy required to remove electrons from atoms. Fluorine (F), chlorine (Cl), bromine (Br), and iodine (I) are found in the halogen family in the periodic table.

Which graph shows the correct trend for the first ionization energy of these four elements?



- 2 Which statement provides the **best** evidence of wave-like behavior in electrons?

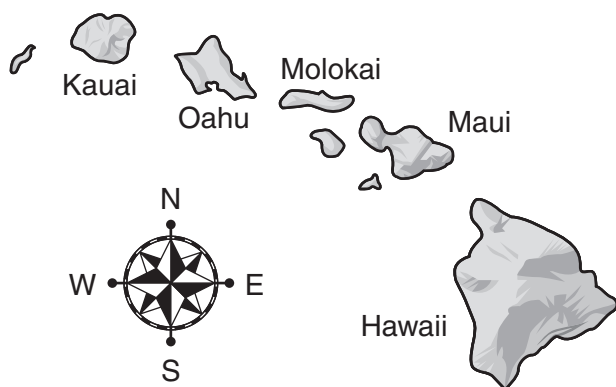
- A. An electron beam demonstrates diffraction when passing through small openings.
- B. An electric burner glows orange when heated with electricity.
- C. Ultraviolet light striking a copper (Cu) plate produces a photoelectric effect.
- D. Electrons are deflected by the poles of a magnet.

- 3 A student is on a train traveling at 60 miles per hour. The student places a basketball on the floor. The basketball remains motionless until the train's brakes are suddenly applied.

Which statement describes the motion of the basketball when this occurs?

- A. The basketball moves forward because it is now moving faster than the train.
- B. The basketball moves forward because it is now moving slower than the train.
- C. The basketball moves backward because it is now moving faster than the train.
- D. The basketball moves backward because it is now moving slower than the train.

- 4 The Hawaiian Islands are younger on the eastern end than on the western end of the chain.



What is causing the age differences among the islands?

- A. Two crustal plates are colliding.
 B. A divergent boundary exists in the ocean floor.
 C. An ocean plate is moving southeast across a hot spot.
 D. An ocean plate is moving northwest across a hot spot.
- 5 Andromeda is the only known galaxy moving toward Earth at a speed of about 300 km/s. How was this information about Andromeda determined?
- A. by measuring the blueshift of its spectral lines
 B. by measuring the redshift of its spectral lines
 C. by measuring the widths of its spectral lines
 D. by measuring the distance between its spectral lines

- 6 The diagram below shows index fossils from different geologic time periods.

Index Fossils

	Brachiopoda	Echinodermata	Mollusca	Arthropoda	Chordata
Quaternary					
Tertiary					
Cretaceous					
Triassic					
Pennsylvanian					
Mississippian					
Devonian					
Silurian					
Ordovician					

Geologic Periods

Based on the diagram, which fossil arrangement is in sequential geologic order?

W	X	Y	Z

- A. W
 B. X
 C. Y
 D. Z

- 7 The table below shows the amounts of adenine, cytosine, and guanine found in a sample of nucleic acid.

Nucleic Acid Sample

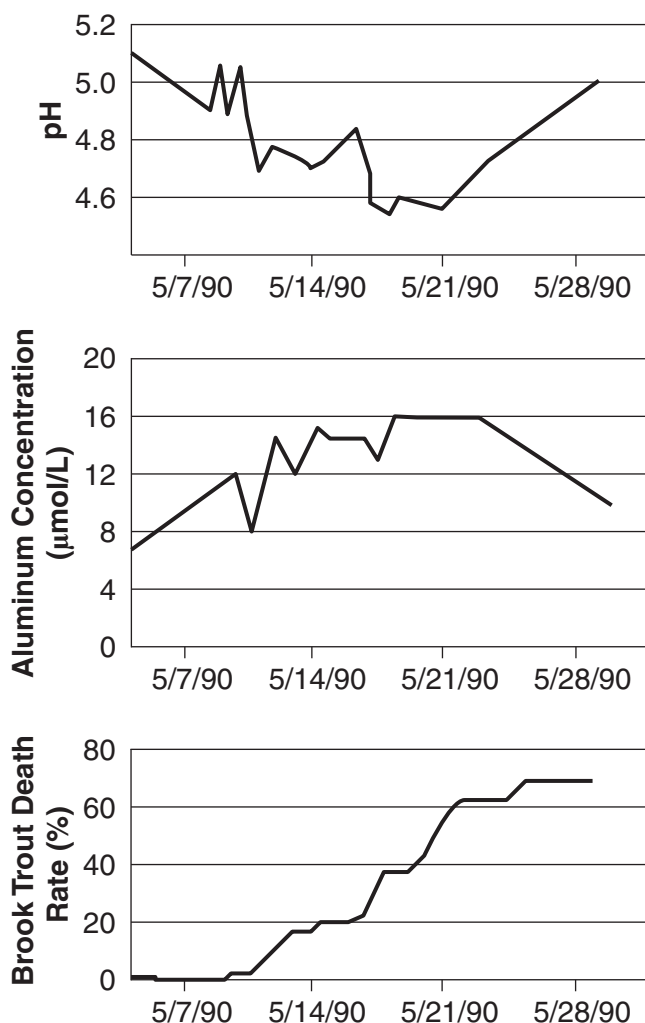
Nitrogenous Base	Percent of Number of Molecules
Adenine	41%
Cytosine	32%
Guanine	16%

Which statement **best** explains whether the sample of nucleic acid is DNA or RNA?

- A. The sample is DNA because the amounts of adenine and cytosine are approximately equal.
- B. The sample is RNA because the amounts of adenine and cytosine are approximately equal.
- C. The sample is DNA because the amounts of cytosine and guanine do not have to be equal.
- D. The sample is RNA because the amounts of cytosine and guanine do not have to be equal.
- 8 All kingdoms of living things can be placed in one of three larger classification groups called domains. Which cell component is found in all three domains of living things?
- A. cell wall
- B. ribosome
- C. nucleus
- D. mitochondria

- 9 The graphs below show data about a stream taken over a period of four weeks. The pH, dissolved aluminum concentration, and death rate of brook trout were measured.

Stream Data

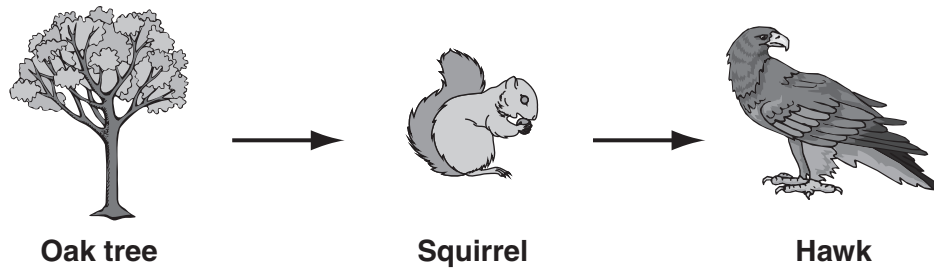


Based on the information in the graphs, which question would be **best** for further scientific investigation?

- A. Do brook trout die as pH and aluminum concentration decrease?
- B. Do brook trout use the dissolved aluminum in the water?
- C. Are brook trout responsible for the changes in pH in the stream?
- D. Are brook trout more sensitive to aluminum than to low pH?

Answer question 10 on page 2 in your Student Answer Booklet.

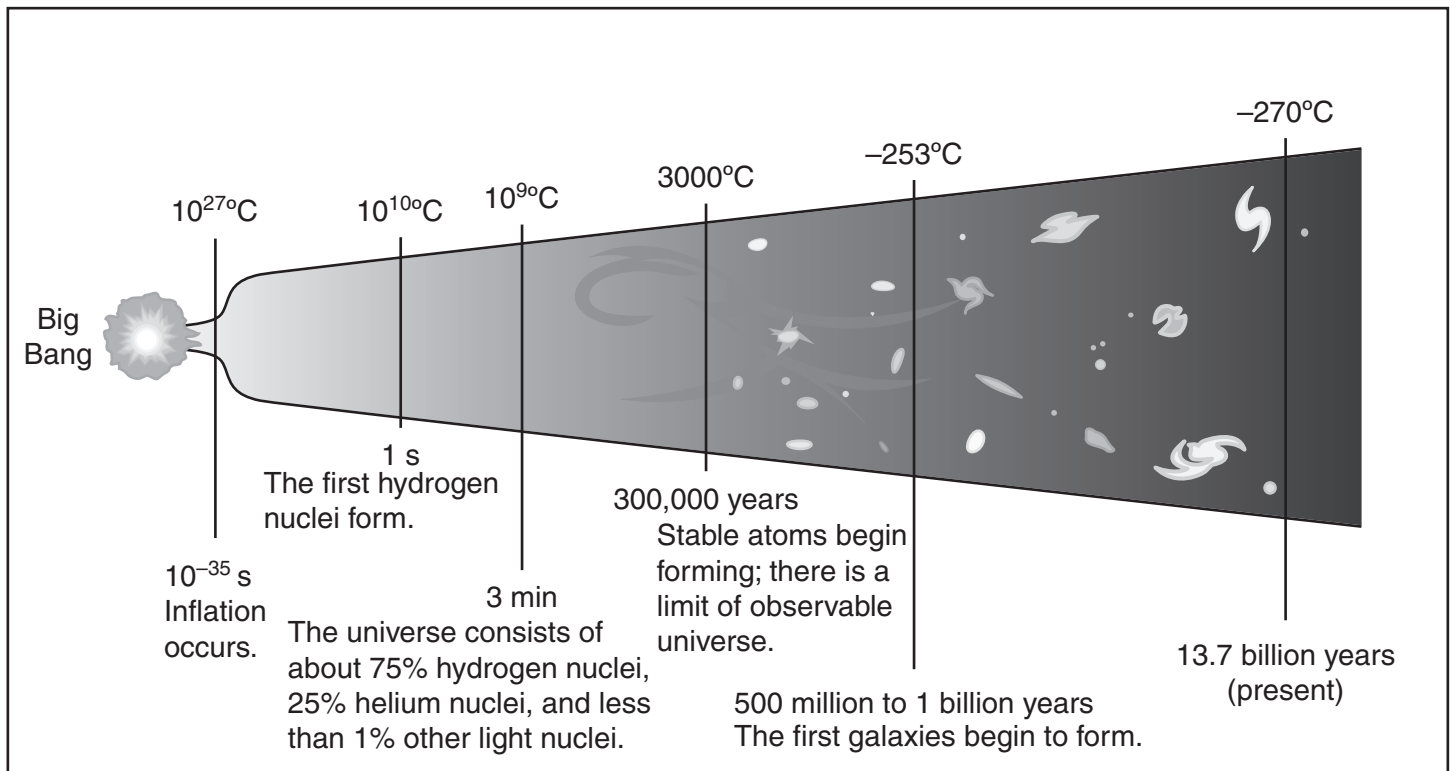
- 10 The diagram below shows the flow of energy in a temperate deciduous forest.



- Which organism is capable of transforming solar energy into chemical energy? Explain your answer.
- Which organism is **least** efficient at capturing energy? Explain your answer.
- Deforestation is the removal of trees by cutting or burning. How would deforestation affect the flow of energy among the trophic levels represented in the diagram?

Answer question 11 on page 3 in your Student Answer Booklet.

- 11 The diagram below shows a time line of the Big Bang Theory.



- Explain **two** pieces of evidence that support the Big Bang Theory.
- Explain **two** forces that contribute to the formation of stars and planets.

You may use information from the diagram in your responses.

